A NEW SPECIES OF AULACIGASTRIDAE FROM PAPUA NEW GUINEA AND CHARACTERISATION OF SPECIES GROUPS IN THE GENUS *NEMO* (DIPTERA, SCHIZOPHORA)

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Abstract

A new species of the aulacigastrid genus *Nemo* from Papua New Guinea is described. Three allopatric species groups in *Nemo* are defined.

Introduction

The minute nobody flies form the subfamily Nemininae of the family Aulacigastridae (McAlpine, 1983). Of the two genera, *Nemo* McAlpine has only been recorded from eastern Australia, and *Ningulus* McAlpine only from South Africa. In describing these new forms, I stated that the available records probably indicated only a small part of the world distribution of the subfamily. The extension of the known distribution to New Guinea is not, therefore, surprising.

Nemo arbelos n.sp

(Figs 1, 2)

MALE

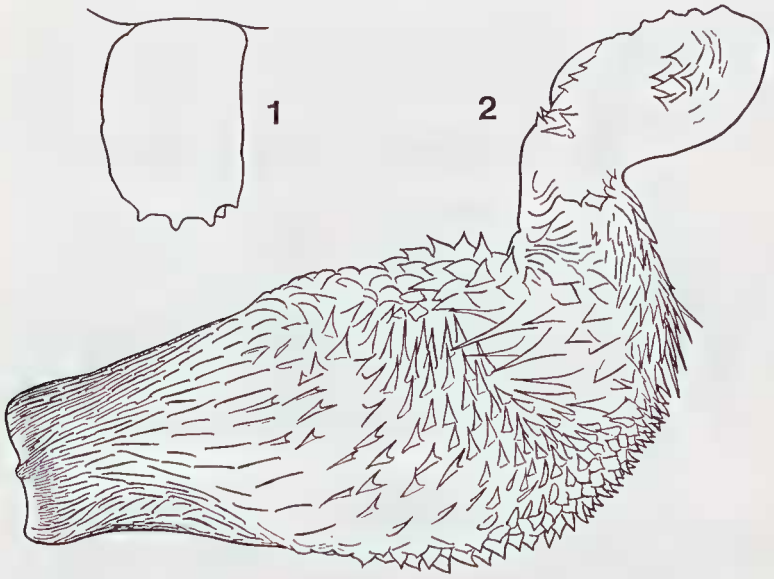
Coloration. Head brownish, with grey pruinescence; vertex with pale yellowish mark on each side; face entirely pruinescent, yellowish brown, paler below, with dark grey spot near middle covering upper part of median carina; postgena with yellowish mark next to eye. Antenna fulvous; arista dark brown. Mesoscutum dark greyish with dull yellowish blotch covering notopleural and supra-alar regions and smaller one between dorsocentral bristle and scutellum on each side; scutellum dark greyish with apex broadly pale yellow; postscutellum yellowish brown; postnotum dark grey; a creamy white stripe covering humeral callus, upper margin of mesopieuron, and basalare; thoracic pleura otherwise greyish brown with yellowish markings. Legs pale yellowish with ill-defined brownish suffusion on tibiae and femora, darkest on hind ones. Wing with pale zone at extreme base slightly differentiated from smoky zone commencing near humeral crossvein. Haltere creamy white. Abdominal tergites 1 to 4 brown-black, with their free margins narrowly pale yellow; remainder of abdomen pale yellowish except for brownish sclerites of protandrium and genital segment.

Head, in profile shaped somewhat as in *N. centriseta* McAlpine (1983: fig. 2), except for the facial carina and narrower eye; eye distinctly setulose; face narrower than in *N. centriseta* from encroachment of eyes, with short, sharp, narrow median carina on lower part of anterior surface, not continued on to ventral surface; no inclinate bristle present behind inner vertical bristle; several minute, pale setulae situated in front of anterior fronto-orbital

bristle; interfrontal bristles as in other species of genus, but small and difficult to discern in dried material.

Thorax. Anterior notopleural and humeral bristles minute; intra-alar bristle distinct, with series of intra-alar setulae extending in front of it to before transverse suture; one dorsocentral bristle present posteriorly; series of dorsocentral setulae extending from near that bristle to in front of transverse suture; acrostichal setulae short in a short irregular, partly double series. Hind femur scarcely longer than mid femur; fore tarsus with no segment noticeably thickened. Wing with veins 3 and 4 slightly convergent for some distance beyond level of discal cell, becoming parallel to slightly divergent for a short distance apically; discal crossvein more oblique than in other species of genus; basal crossvein reduced to a minute stump; costal index 0.53-0.69; vein 4 index 3.1-3.6.

Abdomen. Tergite 5 desclerotized; surstylus (Fig. 1) elongate-oval, with marginal teeth; aedeagus (Fig. 2) somewhat resembling that of *N. lossini* McAlpine, but much stouter on about distal two-thirds of length, with many of the spines short, triangular, and scale-like with short mucronate apices, other spines, particularly near middle of length of aedeagus, with broad bases and variably long bristle-like apices; apical part of aedeagus, as in other species, devoid of erect spines, but with complex pattern of sclerotized ridges.



Figs 1, 2. *Nemo arbelos*, paratype: (1) left surstylus; (2) aedeagus, to *c.* half scale of Fig. 1.

Dimensions. Total length 0.77-0.79 mm; length of thorax 0.36-0.42 mm; length of wing 0.92-1.02 mm.

Distribution. Papua New Guinea—Central province, near coast.

Holotype ♂. 20 km south-east of Port Moresby, 9.i.1982 (Australian Museum), J. W. Ismay.

Paratypes. Same locality, 27.xii.1981 and 9.i.1982 (1 ♂, Department of Primary Industry, Konedobu, 1 ♂, Australian Museum), J. W. Ismay.

Notes. The pale zone on the wing referred to in the above description does not correspond to that mentioned in my description for *N. centriseta* and *N. lossini.* In these two species the pale zone lies largely between the levels of the humeral crossvein and the apex of the subcosta, whereas in *N. arbelos* it lies on the basal side of the humeral crossvein.

The type series of this species consists of well-preserved, mature specimens, but, because of the light sclerotization of the cuticle characteristic of many minute flies, the head has collapsed in all three specimens. One specimen was rehydrated in dilute detergent, and this enabled a more accurate interpretation of head shape, chaetotaxy, and some points of coloration, as well as examination of postabdominal characters.

The collection data indicate that two of the specimens of *Nemo arbelos* were swept from bushes, while the third is simply labelled "bushes". This contrasts with the experience of my colleagues and me with the Australian species. The latter have not been taken by sweeping, all the specimens having been found on tree trunks or on the large leaves of *Alocasia* (McAlpine, 1983).

The specific epithet *arbelos* is from the Greek αρβηλος, a rounded knife as used by a shoemaker, and refers to the facial carina.

Discussion

This new species is closely related to the six described Australian species of *Nemo.* In my table of characters differentiating the two genera of Nemininae (McAlpine, 1983: 75), *N. arbelos* agrees with *Nemo* rather than *Ningulus*, except in the inconspicuous costal break. This and the further reduction of the basal crossvein relative to other species of *Nemo* are probably due to the smaller size of *N. arbelos*, a condition which is often accompanied by simplification in wing structure.

N. arbelos further differs from other species of *Nemo* in the presence of a blade-like median carina on the lower part of the face. Despite its peculiar characters, it is possible that this species is phylogenetically closer to some of the Australian species of *Nemo* than to others, and, therefore, not the sister group of those species as a whole. The first couplet of my key to (Australian) species of *Nemo* differentiates a tropical group of species (anterior notopleural bristle very small; mesoscutum with extensive yellowish markings; 2 strong dorsocentral bristles with no intervening setulae; eye densely setulose) from

a temperate group (anterior notopleural bristle only slightly shorter than posterior one; mesoscutum grey to blackish, with at most the humeral callus paler; dorsocentral bristles generally otherwise, anterior ones, if present, usually relatively short; eye with sparse, inconspicuous setulae). As might be expected, *N. arbelos* more closely resembles the tropical group, but has the yellow zones on the mesoscutum less extensive and only one (posterior) dorsocentral bristle with a well developed series of dorsocentral setulae in front of it. The strongly toothed margin of the surstylus in *N. arbelos* is also more typical of the tropical group of Australian species.

I consider that the most appropriate way of classifying the species of *Nemo* on the available evidence of relationships is in three species groups, as in the following key.

Key to species groups of *Nemo*

1. Face with sharp, blade-like carina on lower part; costa without definite break; New Guinea . . . . . *arbelos* group.
– Face without carina; costa with obvious break at end of subcosta; Australia 2
2. Anterior notopleural bristle very small; mesoscutum with extensive yellowish markings; 2 strong dorsocentral bristles present with no intervening setulae; tropical Queensland. . . . . *centriseta* group.
– Anterior notopleural bristle only slightly shorter than posterior one; mesoscutum grey to black, with at most the humeral callus paler; dorsocentral bristles generally otherwise, anterior ones, if present, usually relatively short; temperate south-eastern Australia. . . . . *corticeus* group.

The *corticeus* group is possibly paraphyletic, as there are no clearly apomorphic characters shared by all its species. On the other hand the species of the group are all very similar structurally and occupy a distinct geographic zone from that of other species groups. The assignment of species within the groups is as follows.

Corticeus group. *Nemo kentae* McAlpine, *N. dayi* McAlpine, *N. corticeus* McAlpine, *N. phaeotylos* McAlpine.

Centriseta group. *Nemo lossini* McAlpine, *N. centriseta* McAlpine.

Arbelos group. *Nemo arbelos* McAlpine.

Acknowledgements

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Reference

McAlpine, D. K., 1983. A new subfamily of Aulacigastridae (Diptera: Schizophora), with a discussion of aulacigastrid classification. *Aust. J. Zool.* 31: 55-78.